Policy Choices and Resilience to International Monetary Shocks

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June 14 2015

Background

- The tapering talk in May 2013 triggered jitters in the financial markets of emerging economies such as India and Indonesia

MSCI Share Price Index, Jan2012=100


India

Indonesia
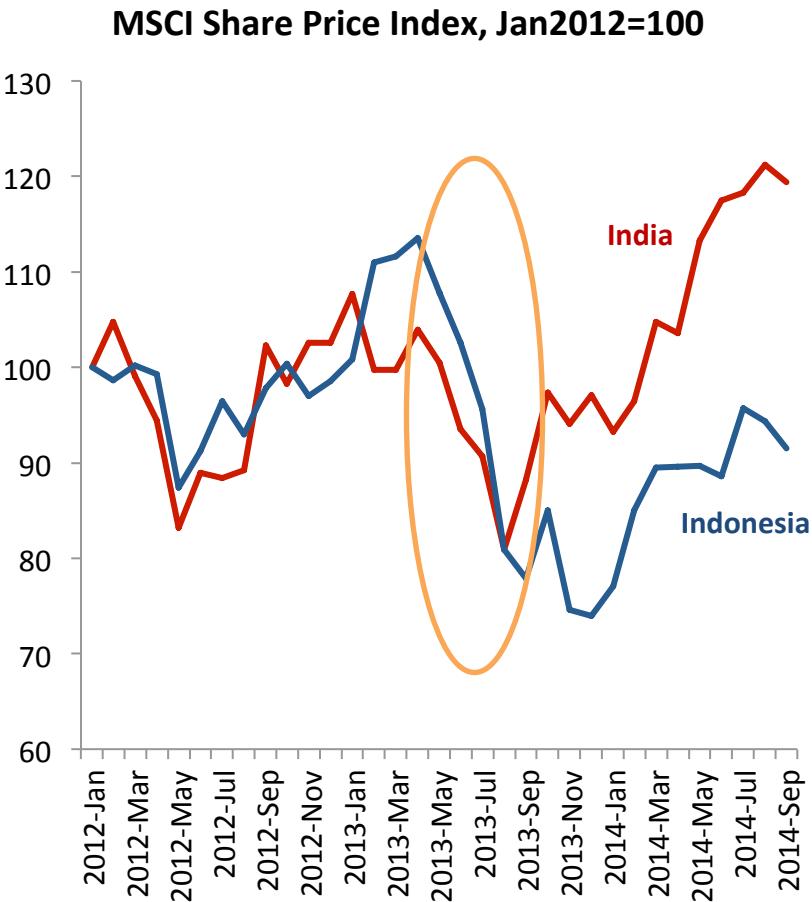
Do Developing Countries Have to Import US Monetary Policies?

- Conventional view:

  - It depends on a country's nominal exchange rate regime: flexible rate system -> monetary policy autonomy

  - Capital controls might help but too costly

  - Intellectual foundation: Mundell's "trilemma"

Policy Choices-*Trilemma theory*

- No "triangular love": cannot have a stable exchange rate, an independent monetary policy, and free capital mobility simultaneously;

- Independent monetary policy is achievable only through a flexible exchange rate regime OR capital controls

Monetary Policy Independence

Financial Market Openness

Choose Two

Exchange Rate Stability
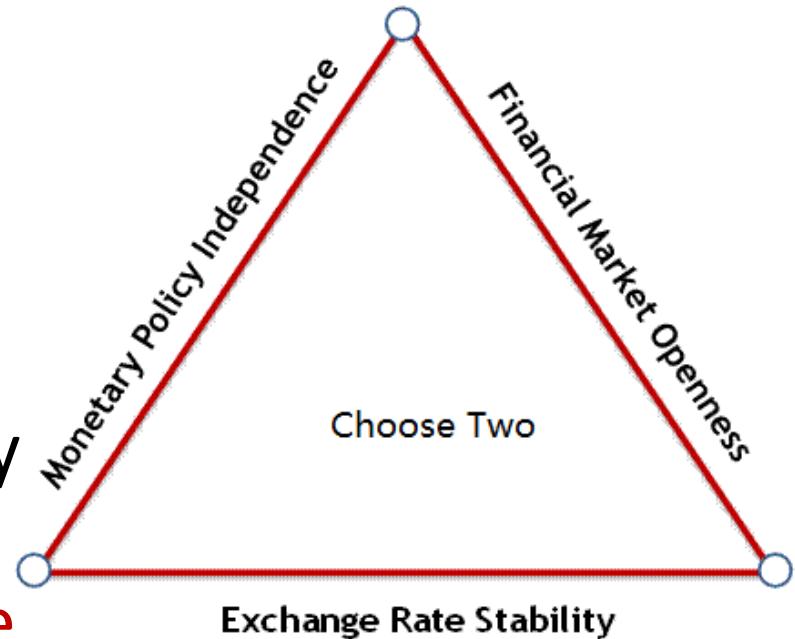
Alternative views

- Calvo and Reinhart, QJE, 2002
  - "Fear of floating"
- H. Tong and S.J. Wei, RFS, 2011
  - The nominal exchange rate regime does not make a difference to the transmission of global financial crisis to developing countries
- H. Rey, Jackson Hole presentation, 2013
 - Capital flows are highly correlated regardless of nominal exchange rate regime.

Competing recommendations:

- For emerging markets: prioritize exchange rate flexibility (e.g., IMF's Article IV reports on the People's Republic of China, 2014) since capital controls are leaky (Edwards, 2012) and costly (e.g., Wei and Zhang, 2007)

- Only capital controls confer real monetary autonomy (Tong and Wei (2011), Chinn and Wei (2013), and Rey (2013))

Empirical investigation

- Does a flexible exchange rate regime really confer monetary policy autonomy?

- Capital control or flexible exchange rate regime, which one is more effective?

The methodology for the investigation

Monetary policy of country k = Part linked to domestic need + Part reflecting passive response to US monetary policy + Part reflecting global risk appetite

Based on domestic growth and inflation

Could be affected by a country's nominal exchange rate regime and capital controls regime
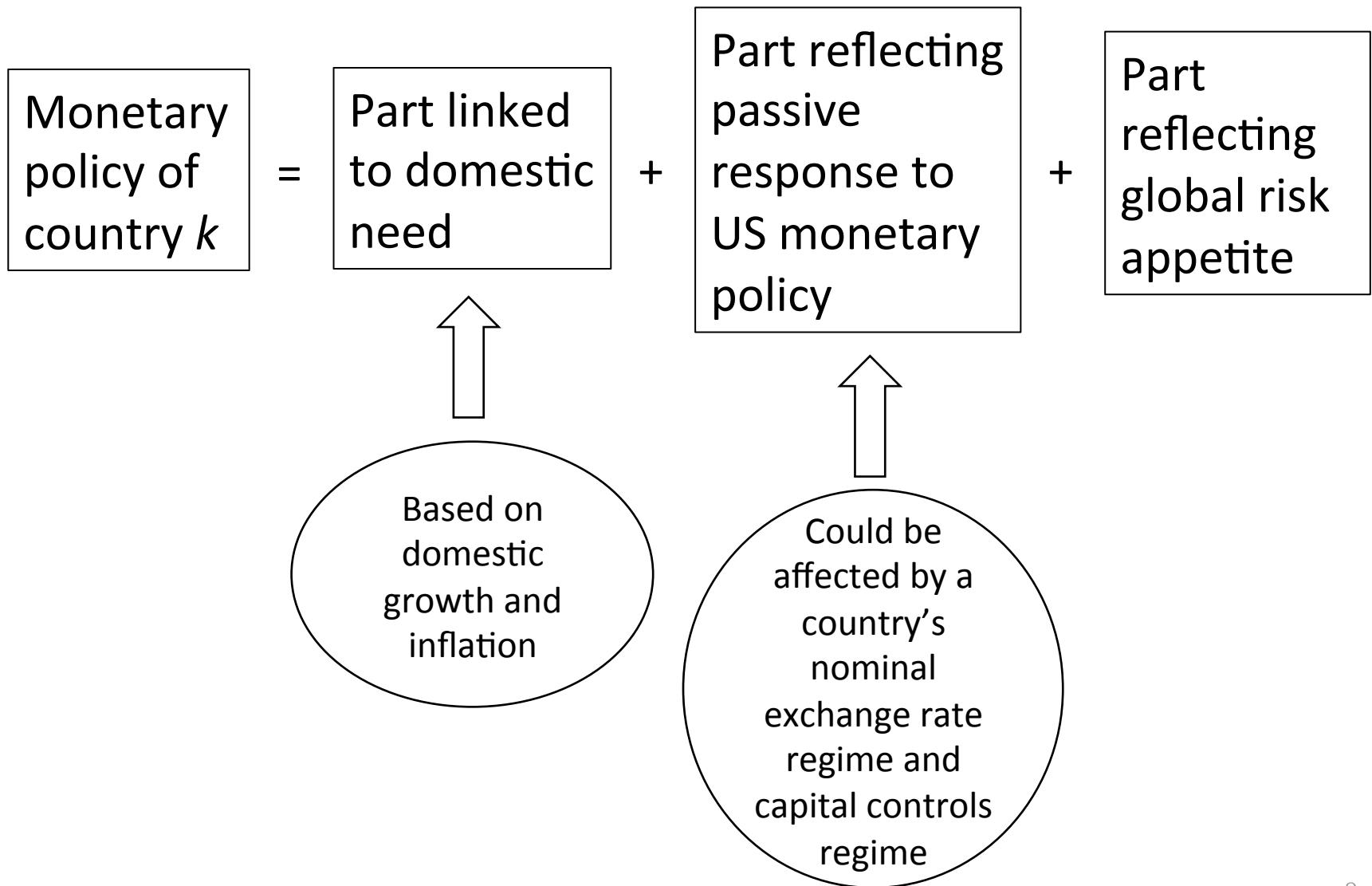
The Baseline Model

(1) $\Delta i_{i,t}^{p} = \lambda i_{i,t-1}^{p} + \gamma_1 \Delta r_{i,t}^{P*} + \gamma_2 \Delta r_t^{US} + \delta VIX_t + \varepsilon_{i,t}$

- $\gamma_1 \Delta r_{i,t}^{P*}$: a desired change based on purely domestic factors;

- $\gamma_2 \Delta r_t^{US}$: an "involuntary" change, responding to a US rate change;

- VIX_t : an indicator of the state of the financial cycle (Chicago Board Options Exchange equity option volatility index)

$$(2) \quad \Delta r_{i,t}^{P*} = \tilde{c} + \widetilde{\phi_1} * \Delta GDP\ growth_{i,t} + \widetilde{\phi_2} * \Delta Inflation_{i,t} + \widetilde{e_{i,t}}$$

$$(3)\ \gamma_2 = \beta_1 D_{fixed\,.NC} + \beta_2 D_{fixed\,.C} + \beta_3 D_{flex\,.C} + \beta_4 D_{flex\,.NC},$$

The model used for estimations

$$\Delta i_{i,t}^p = c + \lambda i_{i,t-1}^p + \phi_1 * \Delta GDP\ growth_{i,t} + \phi_2 * \Delta Inflation_{i,t}$$

$$+\beta_1 D_{fixed\,.NC}\Delta r_{i,t}^{US} + \beta_2 D_{fixed\,.C}\Delta r_{i,t}^{US} + \beta_3 D_{flex\,.C}\Delta r_{i,t}^{US}$$

$$+\beta_4 D_{flex\,.NC}\Delta r_{i,t}^{US} + \delta VIX_t + e_{i,t}$$

Data

- Forecasts of GDP growth and Inflation are from WEO (semiannually) starting from 1990;

- Policy interest rate: monetary policy rate and discount rate (when monetary policy rate is not available);

- Capital Control Index: 1–Chinn-Ito financial openness index;

- Nominal Exchange Rate regime: ReInhart and Rogoff (2012) exchange rate regime classifications;

- Include Germany to represent euro zone countries.

Hypothesis and Analysis

Table 1 Combinations of exchange rate regimes and capital control scenarios and the coefficients on foreign policy influence

|	No Capital Controls	Capital Controls
Fixed Exchange Rate Regime	β_1	β_2
Flexible Exchange Rate Regime	β_4	β_3

No Capital Controls

Capital Controls

Fixed Exchange Rate

Hong Kong, China

The United States

Ecuador

The United States

Flexible Exchange Rate

Peru

The United States

Philippines

The United States
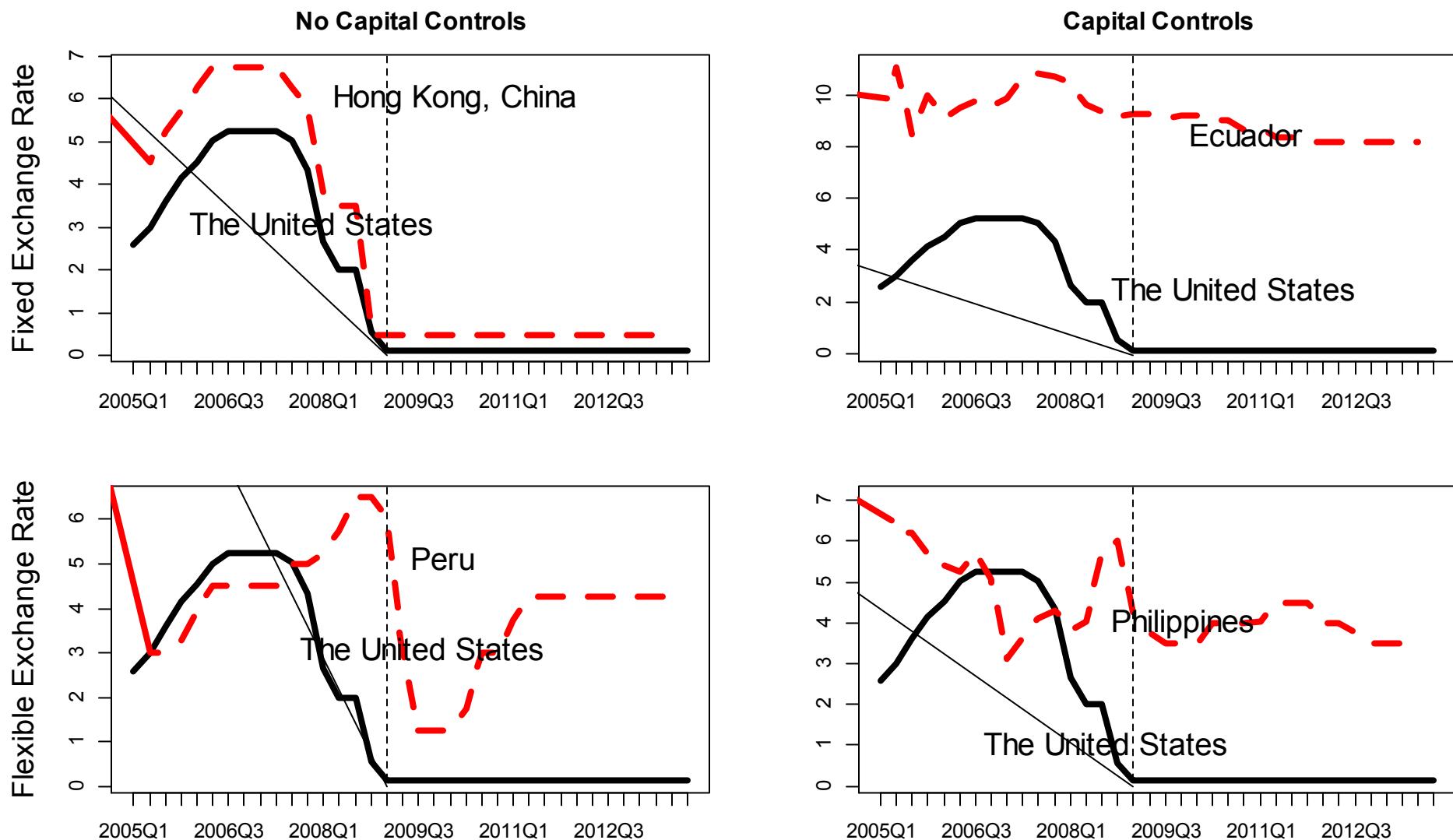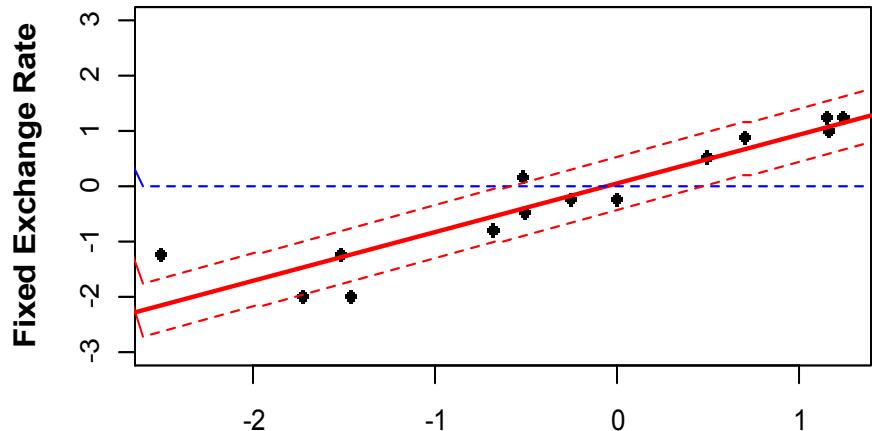
Unconditional Plotting

Conditional Plotting

No Capital Control

Capital Control

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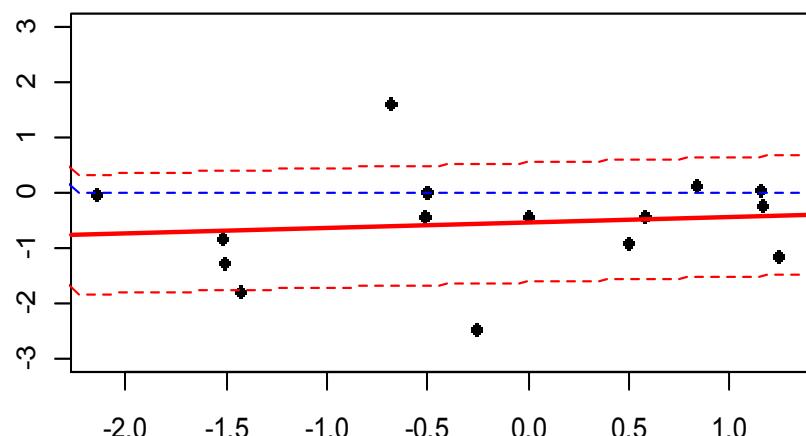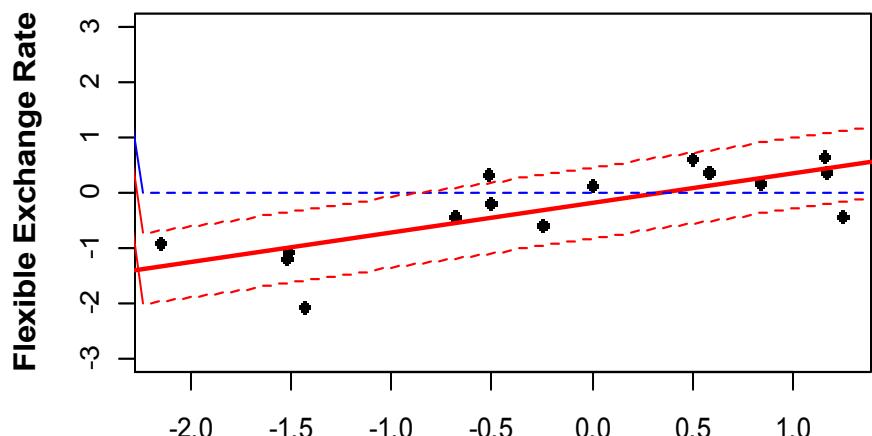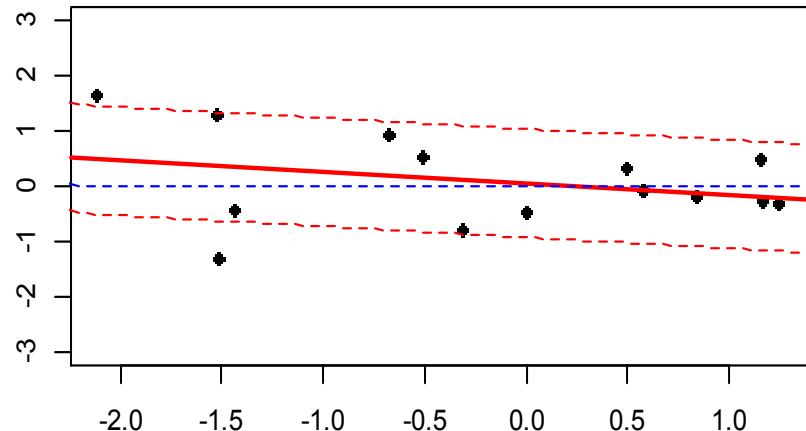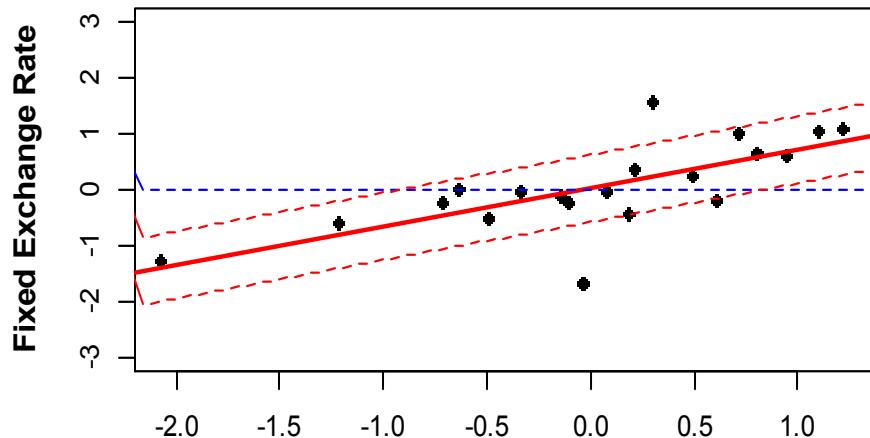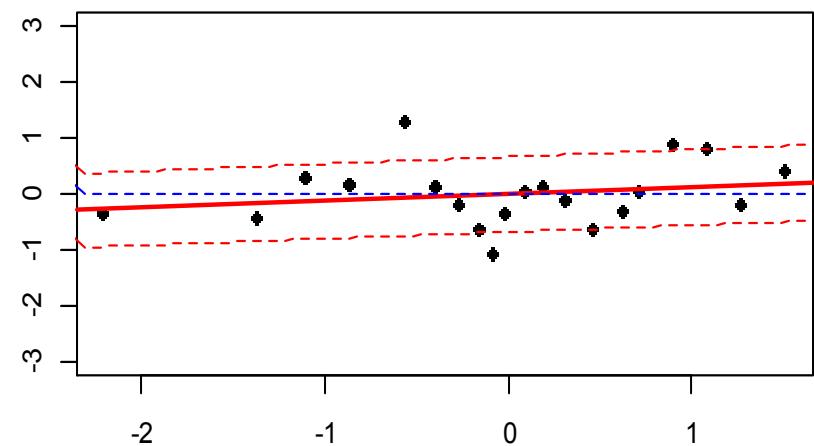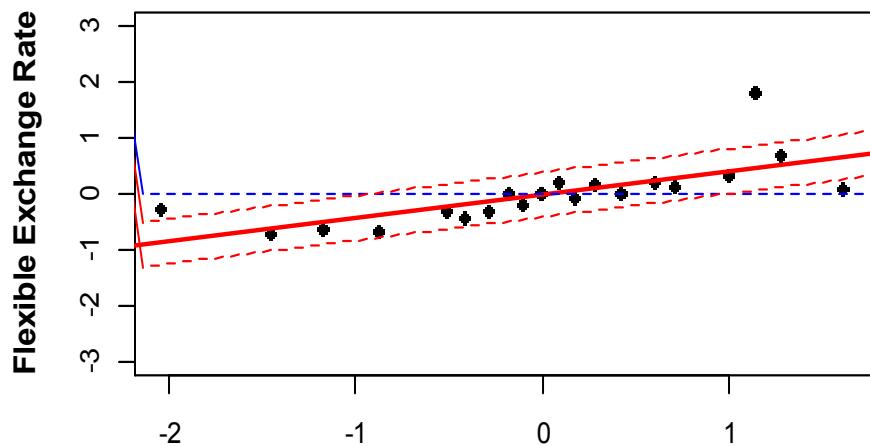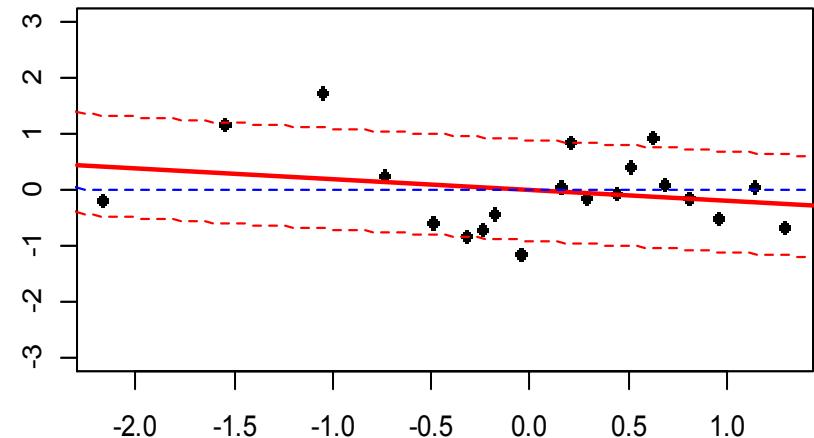
Main findings

- With a fixed exchange rate and no capital controls: An increase in the US interest rate by 100 basis points is followed by an increase in the interest rate by 65 basis points on average;

- Flex rate and no capital controls: an increase in interest rate by 45 bps. (still no monetary policy autonomy)

- With capital controls: domestic interest rate is uncorrelated with the US rate -> autonomy

Table 3 Coefficient estimates for baseline model for different periods

	Baseline Model 1990-2009	Model 1990-1998	Model 1999-2009
$i^p_{i,t-1}$	**-0.048***	-0.007	**-0.110***
ΔGDP growth$_{i,t}$	0.096	0.237	0.041
$\Delta Inflation_{i,t}$	0.**329***	0.134	**0.413***
$D_{fixed\,.NC}\Delta r^{US}_{i,t}$	**0.649***	0.402	**0.654***
$D_{fixed\,.C}\Delta r^{US}_{i,t}$	0.034	1.998	-0.249
$D_{flex\,.NC}\Delta r^{US}_{i,t}$	**0.450***	0.492	**0.497***
$D_{flex\,.C}\Delta r^{US}_{i,t}$	0.029	0.008	0.063
VIX	0.230	0.086	0.176
Adjusted R-squared	0.09	0.00	0.30
No. of Observations	827	295	532

* Significant at 10%.

Robustness Check

Table 4. Coefficient estimates using different exchange rate regimes and capital controls indexes

	Re-defining capital controls	Re-defining the exchange rate regime	Using pre-assigned Taylor Rule
$i^p_{i,t-1}$	**-0.109***	**-0.11***	**-0.111***
ΔGDP growth$_{i,t}$	0.038	0.041	0.256* x0.5=0.128
$\Delta Inflation_{i,t}$	**0.416***	**0.413***	**0.256* x1.5=0.384**
$D_{fixed\,.NC}\Delta r^{US}_{i,t}$	**0.558***	**0.654***	**0.571***
$D_{fixed\,.C}\Delta r^{US}_{i,t}$	**-0.659***	-0.249	-0.311
$D_{flex\,.NC}\Delta r^{US}_{i,t}$	**0.322***	**0.497***	**0.441***
$D_{flex\,.C}\Delta r^{US}_{i,t}$	0.005	0.063	0.005
VIX	0.17	0.176	0.148
Adjusted R-squared	0.29	0.30	0.30
No. of Observations	532	532	532

Imposed-parameter Taylor rule: $\Delta r^{P*}_{i,t} = 0.5 * \Delta GDP\ growth_{i,t} + 1.5 * \Delta Inflation_{i,t}$

Table 5 Coefficient estimates for four groups of countries using SUR

	Fixed and no capital controls	Fixed and capital controls	Flexible and no capital controls	Flexible and capital controls
$i^p_{i,t-1}$	0.011	**-0.056***	**-0.118***	**-0.118***
ΔGDP growth$_{i,t}$	**0.075***	**0.075***	**0.075***	**0.075***
$\Delta Inflation_{i,t}$	**0.26***	**0.26***	**0.26***	**0.26***
$\Delta r^{US}_{i,t}$	**0.669***	**-0.204***	**0.434***	0.047
VIX	**-0.55***	0.238	0.059	**0.504***

- The results of the baseline model are robust to changes in exchange rate regime definition, capital control index, the Taylor rule specification, and SUR.

Conclusions

- The trilemma might be a misleading or incomplete idea

- Countries with a flexible exchange rate system do not appear to be able to insulate themselves from the influence of US monetary policy if they do not have capital controls

- Capital controls do appear to buy countries a significant measure of monetary policy independence

Appendix

Table 2 Country classifications for the baseline estimation

	No Capital Controls	Capital Controls
Fixed Exchange Rate Regime	HK, (199905-200904) Ecuador, (200704-200810) Israel, (200604-200904)	Argentina, (199905-200109) PRC, (199905-200109) Ecuador, (200109-200904) Israel, (200404-200509) Korea, Republic of, (200404-200904) Pakistan, (200404-200904)
Flexible Exchange Rate Regime	Canada, (199905-200904) Chile, (200504-200710) Germany, (199905-200904) Japan, (200005-200904) New Zealand, (199909-200904) Peru, (199909-200904) Singapore, (200204-200904) United Kingdom, (199905-200904)	Argentina, (200309-200904); Australia, (199905-200904); Belarus, (200109-200904); Bolivia, (199905-200904); Brazil, (200005-200904); Chile, (199905-200904); PRC, (200204-200904); Colombia, (199905-200904); Costa Rica, (199905-200904); India, (199905-200904); Indonesia, (199909-200904); Israel, (199905-200309); Japan, (199905-199909); Korea, Republic of, (199905-200309); Mexico, (200810-200904); Pakistan, (199905-200309); Philippines, (199905-200904); South Africa, (199905-200904); Thailand, (200009-200904); Turkey, (199909-200904)

Note: Some countries have different exchange rate regimes during different time periods; the periods are enclosed in parentheses.
PRC=People's Republic of China; HK=Hong Kong, China

Conditional Plotting

Unconditional Plotting

No Capital Control — **Capital Control**

Fixed Exchange Rate (top row), Flexible Exchange Rate (bottom row)